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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,777	10/06/2003	Clinton W. Schneider	VT0303-US1	5855
24473	7590	05/23/2005	EXAMINER	
STEVEN M MITCHELL PACESETTER INC 701 EAST EVELYN AVENUE SUNNYVALE, CA 94086			ARANCIBIA, MAUREEN GRAMAGLIA	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,777

Applicant(s)

SCHNEIDER ET AL.

Examiner

Maureen G. Arancibia

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-20 and 22-25 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15, 17-20 and 22-25 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of Group I, Claims 1-20, and the cancellation of Claim 21, drawn to the non-elected invention of Group II, in the reply filed on 3/3/2005 is acknowledged.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, Claim 15 depends on Claim 1, which has been amended to recite creating a wave pattern. It is therefore unclear what Applicant intends to claim by the recitation of "an irregular pattern" in Claim 15.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 1, 3, 4, 6, 15, 17, 19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Unexamined Patent Application Publication 59-083772-A (the '772 Publication). The following rejection refers to the English abstract and the English translation of this document provided by the Office.**

The '772 Publication discloses a method of manufacturing an electrode foil for a capacitor, comprising forming a pattern of fine lines (1) on the foil surface (2) with a laser beam, and then etching the foil. (English abstract)

In regards to Claims 1, 22, and 23, the '772 Publication teaches a parallel line pattern (Figures 1 and 4) and an intersecting line pattern (Figure 3).

The '772 Publication does not expressly teach a wave pattern, specifically a parallel wave pattern or an intersecting wave pattern.

However, the '772 Publication teaches that the possible patterns are not limited to the illustrated patterns, and that the positions of the lines should be selected based on the desired mechanical strength features. (Page 4 of the English translation, Lines 2-8)

It would have been obvious to one of ordinary skill in the art to modify the '772 Publication to select a wave pattern, either a parallel wave pattern or an intersecting wave pattern, through routine experimentation. The motivation for making such a modification would have been to optimize the mechanical strength features of the

Art Unit: 1763

etched foil. Moreover, the Examiner observes that Applicant has disclosed the various possible patterns as interchangeable, with no showing of criticality of any of the particular patterns. (Specification, Paragraph 40)

In regards to Claim 3, the application of the laser beam causes oxidation of the surface. (English abstract)

In regards to Claim 4, the laser beam is applied before the etching step. (English abstract)

In regards to Claim 6, according to an oral translation, the first embodiment of the '772 Publication discloses that the etching step should be a conventional electrochemical process. (Page 2, Column 2, last paragraph)

In regard to Claim 15, the '772 Publication does not expressly disclose that the laser beam can be used to create an irregular pattern of fine lines (1).

However, the '772 Publication concludes (English translation, Page 3, Lines 5-13) that the foil etches more deeply where the lines are not formed.

It would have been obvious to one of ordinary skill in the art to use the laser beam to create an irregular pattern on the surface of the foil. The motivation for doing so would have to preferentially protect some areas of the foil (i.e. where the foil is to be folded or welded) from deeper etching, thereby giving those areas greater strength.

In regards to Claim 17, the '772 Publication teaches that laser beam can be applied to both sides of the foil. (English abstract)

In regards to Claim 19, according to an oral translation, the first embodiment of the '772 Publication includes a step of forming the foil in a boric solution at a voltage of 375 V. (Page 2, Column 2, last paragraph)

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of the English Abstract of Japanese Unexamined Patent Application Publication 02-075155-A (the '155 Abstract).

The teachings of the '772 Publication as modified in regards to Claim 1 were discussed above.

The '772 Publication does not expressly teach that the application of the laser causes local melting of the foil.

The '155 Abstract teaches that the application of the laser causes local melting of the foil. (Constitution)

It would have been obvious to one of ordinary skill in the art to modify the '772 Publication as applied to Claim 1 to have the laser cause local melting of the foil. The motivation for making such a modification, as taught by the '155 Abstract (Purpose), would have been to prevent burring.

8. Claims 5, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of the English Abstract of Japanese Patent Application Publication 04-056309 A (the '309 Abstract).

The teachings of the modified '772 Publication were discussed above.

Art Unit: 1763

In regards to Claims 5, 24, and 25, the '772 Publication does not expressly teach that the laser beam can be applied after the etching step.

The '309 Abstract teaches that a laser beam can be applied after an etching step. (Purpose)

It would have been obvious to one of ordinary skill in the art to reverse the order of the application of the laser beam and the etching step taught by the '772 Publication. The motivation for doing so, as taught by the '309 Abstract (Constitution), would have been to produce a foil with a high electrostatic capacity when used in a capacitor.

9. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 6, and further in view of U.S. Patent 5,715,133 to Harrington et al.

As discussed above, the modification of the '772 Publication teaches the limitations of Claim 6, on which Claim 7 depends, including that the etching step can be an electrochemical process. (First embodiment)

The '772 Publication does not expressly disclose that the electrochemical etching process should comprise: placing the foil in an electrochemical bath comprising an anode portion with an anode electrolyte and a cathode portion; connecting the foil to a charge source in the anode portion of said bath; and applying an etch charge to the foil for a specified amount of time. The '772 Publication also does not expressly teach claimed parameters of the etching process recited in Claims 8-11: a current density of about 0.10-0.25 Amp/cm²; a corresponding etch charge of 5-50 Coulombs/cm²; an

Art Unit: 1763

anode electrolyte comprising about 1-3% sodium chloride and about 2-5% sodium perchlorate or sodium persulfate; and an electrolyte temperature of about 80-90°C.

Harrington et al. teaches an electrochemical etching process that includes placing the foil (1) in an electrochemical bath comprising cathode portions (5) and an anode portion (4) filled with an anode electrolyte comprising 1.3% by weight sodium chloride and 3.5% by weight sodium perchlorate (Column 3, Lines 42-50); and applying a current. (Column 3, Line 63) The current density can range from 0.08-0.35 Amp/cm². (Column 3, Lines 14-15) Harrington et al. actually performs the electrochemical etching with a current density of 0.15 Amp/cm² for a specified time, 250-267 sec. (Column 4, Table, Step 3) These conditions correspond to an etch charge of 37.5-40.1 Coulombs/cm². (Etch charge [Coulombs/cm²] = Current density [Amps/cm²] x Time [sec]) Harrington et al. also teaches that the anode electrolyte should be at 75-90 °C during the etching process. (Column 4, Table, Step 3)

It would have been obvious to one of ordinary skill in the art to perform the method of the '772 Publication using the electrochemical etching process and parameters taught by Harrington et al. The motivation for doing so, as taught by Harrington et al. (Column 2, Lines 35-42), would have been to use an electrochemical process that maintains electrolyte efficacy during the etching.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of U.S. Patent 3,779,877 to Alwitt.

As discussed above, the modification of the '772 Publication teaches all of the limitations recited in Claim 1, on which Claim 18 depends.

The '772 Publication does not expressly disclose that the method of Claim 1 should further comprise, after the steps of applying the laser to the foil and etching the foil, a step of widening the foil.

Alwitt teaches that a process of electrochemically etching a capacitor foil should be followed by a step of widening the foil; i.e. further etching the previously etched areas without initiating new etch sites. (Column 1, Lines 60-67; Column 2, Lines 1-2)

It would have been obvious to modify the method taught by the '772 Publication to include a step of widening the etched foil, as taught by Alwitt. The motivation for doing so, as taught by Alwitt (Column 1, Lines 55-57), would have been to produce a capacitor foil with reproducibly uniform etched features.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of U.S. Patent 4,481,084 to Chen et al. and "A New Coating Process for Aluminum" by Patel et al. (Posted on 10/25/2000 on <http://www.ceramicindustry.com>)

As discussed above, the modification of the '772 Publication teaches all of the limitations of Claim 19, on which Claim 20 depends, including a step of forming the foil at 375 V. (First embodiment)

The '772 Publication does not teach the process of forming the foil recited in Claim 20, comprising forming the foil in a solution comprising citric acid, with a temperature of 80-100 °C and a current density of 10-20 mA/cm².

Chen et al. teaches a process of forming a capacitor foil in a solution comprising citric acid at a temperature of 70-90 °C. (Column 1, Line 44-50)

Patel et al. teaches that aluminum is traditionally formed (anodized) at current densities of 10-100 mA/cm² (1-10 A/dm²). (Page 1, second paragraph)

It would have been obvious to one of ordinary skill in the art to modify the process of forming the foil taught by the '772 Publication to use a solution of citric acid at 70-90 °C, as taught by Chen et al., and to have a current density between 10-100 mA/cm², as taught by Patel et al.

The motivation for using a forming solution comprising citric acid, as taught by Chen et al. (Column 2, Lines 25-27), would have been that its presence helps to promote crystalline oxide formation. The amount of crystalline oxide is associated with higher capacitance. (Chen et al., Column 1, Lines 30-31) The motivation for having the forming solution at 70-90 °C, as taught by Chen et al. (Column 2, Lines 54-55), would have been that a high forming solution temperature results in a more crystalline oxide layer. The motivation for having a current density between 10-100 mA/cm², as taught by Patel et al. (Page 1, second paragraph), would have been to use a conventional current density for the forming process.

12. Claims 7-11, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of U.S. Patent 6,802,954 to Hemphill et al.

In regards to Claims 7-11, the modification of the '772 Publication teaches the limitations of Claim 6, on which Claim 7 depends, including that the etching step can be an electrochemical process. (First embodiment)

The '772 Publication does not expressly disclose the steps for the electrochemical etching process recited in Claim 7, nor the claimed parameters of the etching process recited in Claims 8-11.

Hemphill et al. discloses an electrochemical etching process for a capacitor foil that meets the limitations of Claim 7, namely etching the foil according to a conventional process by placing it in an anode electrolyte and applying a current with a particular density for a specified period of time. (Column 4, Lines 17-18 and 33-51) Hemphill et al. also teaches the claimed parameters of the etching process recited in Claims 8-11: a current density of 0.1 to 0.3 Amp/cm²; a etch charge of 5-50 Coulombs/cm² for a particular period of time; an anode electrolyte comprising 1.3% sodium chloride and 3.5% sodium perchlorate; and an electrolyte temperature of 80-100 °C.

It would have been obvious to one of ordinary skill in the art to use the electrochemical etching steps and parameters taught by Hemphill et al. in the method of the '772 Publication. The motivation for doing so, as taught by Hemphill et al. (Column 2, Lines 47-49; Column 4, Lines 23-27), would have been to produce an enlargement in surface area of the foil of at least 20 times, thereby increasing the capacitance of the capacitor made from the etched foil.

In regards to Claim 18, the '772 Publication does not teach a step of widening the foil after the steps of applying the laser and etching the foil.

Art Unit: 1763

Hemphill et al. teaches that the etched foil should be widened. (Column 5, Lines 61-62)

It would have been obvious to one of ordinary skill in the art to modify the method taught by the '772 Publication to include a step of widening the foil, as taught by Hemphill et al. The motivation for doing so would have been to further increase the surface area of the etched foil.

In regards to Claim 20, the '772 Publication teaches all of the limitations of Claim 19, on which Claim 20 depends, including a step of forming the foil at 375 V. (First embodiment)

The '772 Publication does not teach the process of forming the foil recited in Claim 20, comprising forming the foil in a solution comprising citric acid, with a temperature of 80-100 °C and a current density of 10-20 mA/cm².

Hemphill et al. teaches that the process of forming the foil can comprise placing the foil in a forming solution of citric acid at 80-100 °C, and applying a current at a density of 1-40 mA/cm². (Column 6, Lines 8-14)

It would have been obvious to one of ordinary skill in the art to modify the forming process taught by the '772 Publication to use a forming solution comprising citric acid at 80-100 °C, and to apply a forming current at a density of 1-40 mA/cm², as taught by Hemphill et al. The motivation for making these modifications, as taught by Hemphill et al. (Column 6, Lines 14-20), would have been to have a forming process that produces a barrier oxide layer with a high resistance to leakage current.

Art Unit: 1763

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication as applied to Claim 1, and further in view of the English abstract of Japanese Unexamined Patent Application Publication 07-049428-A (the '428 Abstract).

The modification of the '772 Publication teaches the limitations recited in Claim 1, on which Claim 12 depends, including a step of applying a laser to a foil. (English abstract)

The '772 Publication does not expressly disclose that the laser can be an Nd:VO₄, Nd:YAG, or CO₂ laser.

The '428 Abstract discloses that an Nd:YAG (i.e. YAG) laser can be used to heat a metal layer (14). (Constitution)

It would have been obvious to one of ordinary skill in the art to use an Nd:YAG laser, as taught by the '428 Abstract, in the method taught by the '772 Publication. The motivation for doing so, as taught by the '428 Abstract (Constitution), would have been to use a laser that was capable of heating metal sufficiently to oxidize it.

14. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '772 Publication in view of the '428 Abstract as applied to Claim 12, and further in view of U.S. Patent Application Publication 2002/0111029 to Johnson.

The combination of the '772 Publication and the '428 Abstract meets the limitations of Claim 12.

Art Unit: 1763

The combination of the '772 Publication and the '428 Abstract does not teach that the laser scan rate can be in the range of about 20-500 mm/sec, or that the laser beam spot size can be in the range of about 20-100 microns.

Johnson teaches a method of laser etching with a laser scan rate of 20-40 mm/sec and a laser beam spot size of 18-25 microns. (Paragraph 38)

It would have been obvious to one of ordinary skill in the art to modify the method taught by the combination of the '772 Publication and the '428 Abstract to have a laser scan rate of 20-40 mm/sec and a laser beam spot size of 18-25 microns, as taught by Johnson. The motivation for using the parameters in scan rate and spot size taught by Johnson would have been to finely control the application of the laser. (Johnson, Paragraph 34)

Response to Arguments

15. Applicant's arguments with respect to claims 1-15, 17-20, and 22-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 1763

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Maureen G. Arancibia', with a stylized flourish at the end.

Maureen G. Arancibia

Application/Control Number: 10/680,777

Page 15

Art Unit: 1763

Patent Examiner, AU 1763

p-l
PARVIZ HASSENZADEH
SUPERVISORY PATENT EXAMINER